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<p>(21) International Application Number: PCT/FI98/00294</p> <p>(22) International Filing Date: 1 April 1998 (01.04.98)</p> <p>(30) Priority Data: 971381 3 April 1997 (03.04.97) FI</p> <p>(71) Applicant (for all designated States except US): NOKIA TELECOMMUNICATIONS OY [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).</p> <p>(72) Inventors; and</p> <p>(75) Inventors/Applicants (for US only): SALIN, Hannu-Pekka [FI/FI]; Vapaalantie 33 B, FIN-1650 Vantaa (FI). HAU-MONT, Serge [GB/FI]; Tehtaankatu 6 B 14, FIN-00140 Helsinki (FI).</p> <p>(74) Agent: KOLSTER OY AB; Iso Roobertinkatu 23, P.O. Box 148, FIN-00121 Helsinki (FI).</p>		<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> With international search report.</p> <p>(88) Date of publication of the international search report: 7 January 1999 (07.01.99)</p>	
<p>(54) Title: DELIVERY OF SHORT MESSAGES IN A PACKET RADIO NETWORK</p> <p style="text-align: center;">           1. Message Transfer          2. Send Routing Info For Short Message          3. Send Routing Info For Short Message Ack (SGSN, MSC/VR)          4. Forward Short Message          5. QOSH: MS = GPRS detach          6. Failure Report          7. SGSN: MSNRF on          8. Forward Short Message          9. Message Transfer          10. Delivery Report          11. Delivery Report          12. Delivery Report (... MS not via GPRS)          13. HLR: flag "MS not GPRS" on          14. New SM to MS          15. Message Transfer          16. Send Routing Info For Short Message          17. Send Routing Info For Short Message Ack (MSC/VR)          18. Forward Short Message          19. Message Transfer          20. Delivery Report          21. Delivery Report          22. Delivery Report          23. Attach Complete          24. New MS present          25. HLR: flag "MS not GPRS" off       </p>			
<p>(57) Abstract</p> <p>The invention relates to delivery of short messages to mobile stations and particularly to delivery of short messages in mobility-supporting packet radio networks that use a mobile communications network as an access network, to a dual-mode mobile station in a situation where the mobile station is not reachable in the packet radio network. The object of the invention is to minimize unnecessary signalling. The invention is based on the fact that parameters controlling the network elements are inserted into the signalling messages and a flag indicating the state of the mobile station is inserted into the home location register. In the method and radio network of the invention, the signalling messages may contain parameters by means of which 1) delivery of a short message through the secondary network is prevented, 2) information on the fact that an attempt was made to reach the mobile station but the attempt was not successful is sent to the node of the secondary network, 3) the node of the secondary network is prevented from informing the home location register of the mobile station of the attach of the mobile station to the network, 4) information is sent to the home location register on the fact that the mobile station cannot be reached through the primary network, and 5) information is sent to the gateway mobile switching center for short message service on the fact that the mobile station can be reached through the primary network even though the short message was delivered through the secondary network.</p>			

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI 98/00294

## A. CLASSIFICATION OF SUBJECT MATTER

IPC6: H04Q 7/22

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9416532 A1 (NOKIA TELECOMMUNICATIONS OY), 21 July 1994 (21.07.94), page 13, line 19 - page 15, line 15, figures 4-10  --	1-18
A	WO 9603843 A2 (NOKIA TELECOMMUNICATIONS OY), 8 February 1996 (08.02.96), Fig. 4-7 and adherent text  --	1-18
A	WO 9512292 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 4 May 1995 (04.05.95), page 7, line 4 - line 11  --	1-18
A	WO 9326131 A1 (NOKIA TELECOMMUNICATIONS OY), 23 December 1993 (23.12.93)  --	1-18

 Further documents are listed in the continuation of Box C. See patent family annex.

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International application No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2244409 A (TELECOM SECURICOR CELLULAR RADIO LIMITED), 27 November 1991 (27.11.91) -- -----	1-18

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

05/10/98

International application No.	
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WO 9416532 A1	21/07/94	AU 671186 B AU 5817494 A CN 1101489 A EP 0631708 A FI 802 U FI 92364 B,C FI 930172 D,V JP 7504792 T NO 943009 A US 5628051 A		15/08/96 15/08/94 12/04/95 04/01/95 12/07/93 15/07/94 22/03/93 25/05/95 14/09/94 06/05/97
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